Applicants : Dean p. Macri et al.
Serial No. : 09/539,343
Filed : March 31, 2000
Page : 9 of 13

Attorney's Docket No.: 10559-154001
Intel Ref.: P7988

REMARKS

Claims 1, 3, 5-6, 8-11, 13, 15, 17-20, 22, 24, 26-27, and 29 to 30 are pending in the

application, of which claims 1, 9, 11, 18, 20, 27 and 29 are independent. Favorable

reconsideration and further examination are respectfully requested.

Claims 1, 3, 5-6, 8-11, 13, 15, 17-20, 22, 24, 26-27, and 29 to 30 were rejected under 35

U.S.C. § 102(b) over U.S. Patent No. 5,299,302 (Fiasconaro). As shown above, Applicants have

amended the claims to define the invention with greater clarity. In view of these clarifications,

withdrawal of the art rejection is respectfully requested.

Amended independent claim 1 defines a method of trimming a parametric surface. The

method includes producing a trimming texture, which comprises a texture map image

representation of a trimming curve for the parametric surface. The trimming texture is applied

by texture mapping the trimming texture onto the parametric surface to produce trimmed and

untrimmed portions. Only the untrimmed portion is rendered.

The applied art is not understood to disclose or to suggest the foregoing features of claim

1, particularly with respect to producing a trimming texture that is a texture map image

representation of a trimming curve for the parametric surface, and texture mapping the trimming

texture onto the parametric surface to product trimmed and untrimmed portions.

More specifically, the Fiasconaro reference describes a method of rendering an image of

an object's surface, which includes applying a trimming curve to the object's surface,

determining whether each point of the surface lies on, inside or outside of the trimming curve,

altering the surface of the object by removing the points that lie in the portion of the surface to be

Applicants : Dean p. Macri et al.
Serial No. : 09/539,343
Filed : March 31, 2000
Page : 10 of 13

Attorney's Docket No.: 10559-154001
Intel Ref.: P7988

trimmed, and creating a visible image of the altered surface by making visible only those pixels

corresponding to points remaining on the altered surface of the object. This is described in col.

1, line 64 to col. 2, line 5, which states the following:

> The graphics accelerator computes a sufficiently dense point by point representation of each
> trimming curve in uv space, in addition to point by point representation of the individual subspans
> in uv space whose associated polygons in XYZ space approximate the patch. The graphics
> determines where straight line approximating segments of the trimming curves cross subspan
> boundaries and changes the vertices of the subspans to trim away portions of the associated
> polygon.

and

col. 6, lines 5 to 18, which states the following:

> [T]he rendering of a patch having a "subtracted" portion can be accomplished by a qualified
> evaluation of the patch generation functions for the associated span. The qualification takes the
> form of determining, during the evaluation of the patch generation functions, whether the (u,v)
> pair at hand lies on, inside or outside of the trimming curve. The qualification produces a decision
> about whether or not to display the associated (X,Y,Z) triple. If that triple is to be displayed,
> things proceed as previously described. However, if that evaluation of the (u,v) pair would
> produce a polygon vertex lying within the region to be subtracted, then the triple cannot be
> displayed and the existing polygon structure must be modified.

Thus, the trimming curve in the Fiasconaro reference is applied directly to the surface of

the object. The polygon structure of the object is altered based on whether points of the object

lie on, inside or outside of the trimming curve. The Fiasconaro reference does not teach or

suggest producing a trimming texture that is a texture map image representation of a trimming

curve for the parametric surface, much less texture mapping the trimming texture onto the

parametric surface to produce trimmed and untrimmed portions, as recited in claim 1.

In this regard, it was said on page 3 of the Office Action that Fiasconaro discloses texture

mapping. Although it is not entirely clear, it appears that the "patch generation" feature

described in Fiasconaro is being equated to texture mapping. Applicants respectfully disagree

with this characterization of the "patch generation" feature. More specifically, the "patch

Applicants : Dean p. Macri et al.
Serial No. : 09/539,343
Filed : March 31, 2000
Page : 11 of 13

Attorney's Docket No.: 10559-154001
Intel Ref.: P7988

generation" feature disclosed in the Fiasconaro reference is used to divide a large surface into smaller portions (commonly called patches). For each patch, the Fiasconaro system produces three or four patch generation functions of u and v that map values in a two-dimensional parameter space into XYZ space to produce the (X,Y,Z) triples that lie on that particular patch. The "patch generation" feature does not texture map a trimming texture onto the parametric surface to produce trimmed and untrimmed portions.

For at least the foregoing reasons, Applicants respectfully submit that claim 1 is patentable over the Fiasconaro reference.

Amended independent claim 11 is an article of manufacture claim that roughly corresponds to claim 1; and amended independent claim 20 is an apparatus claim that roughly corresponds to claim 1. These claims are also believed to be patentable for at least the reasons set forth above with respect to claim 1.

Amended independent claim 9 defines a method of trimming a parametric surface, which includes producing a trimming texture, the trimming texture comprising a texture map image representation of a trimming curve for the parametric surface, mapping the trimming texture on the parametric surface to create a trimmed section and a rendered section, the trimming texture being mapped by texture mapping, and rendering only the rendered section of the parametric surface based on an application of the trimming texture to a plurality of polygons approximating the parametric surface.

As explained above with respect to claim 1, the Fiasconara reference is not understood to disclose or to suggest producing a trimming texture that is a texture map image representation of

Applicants : Dean p. Macri et al.   Attorney's Docket No.: 10559-154001
Serial No. : 09/539,343   Intel Ref.: P7988
Filed   : March 31, 2000
Page   : 12 of 13

a trimming curve for the parametric surface, mapping a trimming texture on a parametric surface to create a trimmed section and a rendered section, and rendering only the rendered section of the parametric surface. Accordingly, claim 9 is also believed to be patentable over the art.

Amended independent claim 18 is an article of manufacture claim that roughly corresponds to claim 9; and amended independent claim 27 is an apparatus claim that roughly corresponds to claim 9. These claims are also believed to be patentable for at least the reasons set forth above with respect to claim 9.

Amended independent claim 29 defines a method for use in rendering images from data for an original three-dimensional model. The method includes obtaining a trimming texture that is a texture map image representation of a trimming curve for at least a portion of the three-dimensional model, applying the trimming texture to the three-dimensional model, the trimming texture being applied by texture mapping the trimming texture onto the parametric surface to produce trimmed and untrimmed portions, and rendering an image using only the untrimmed portion.

The Fiasconaro reference does not describe obtaining a trimming texture that is a texture map image representation of a trimming curve for at least a portion of the three-dimensional model, applying the trimming texture to a three-dimensional model by texture mapping the trimming texture onto the three-dimensional model to produce trimmed and untrimmed portions, and rendering only the untrimmed portion. Accordingly, claim 29 is believed to be patentable over the art.

Applicants : Dean p. Macri et al.
Serial No. : 09/539,343
Filed : March 31, 2000
Page : 13 of 13

Attorney's Docket No.: 10559-154001
Intel Ref.: P7988

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney can be reached at the address shown below. Telephone calls regarding this application should be directed to the undersigned at 617-521-7896.

No fee is believed to be due for this Reply; however, if any fees or credits are due, please apply them to Deposit Account No. 06-1050.

Respectfully submitted,

Date: October 24, 2003

Paul A. Pysher
Reg. No. 40,780

ATTORNEYS FOR INTEL
Fish & Richardson P.C..
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

20735617.doc